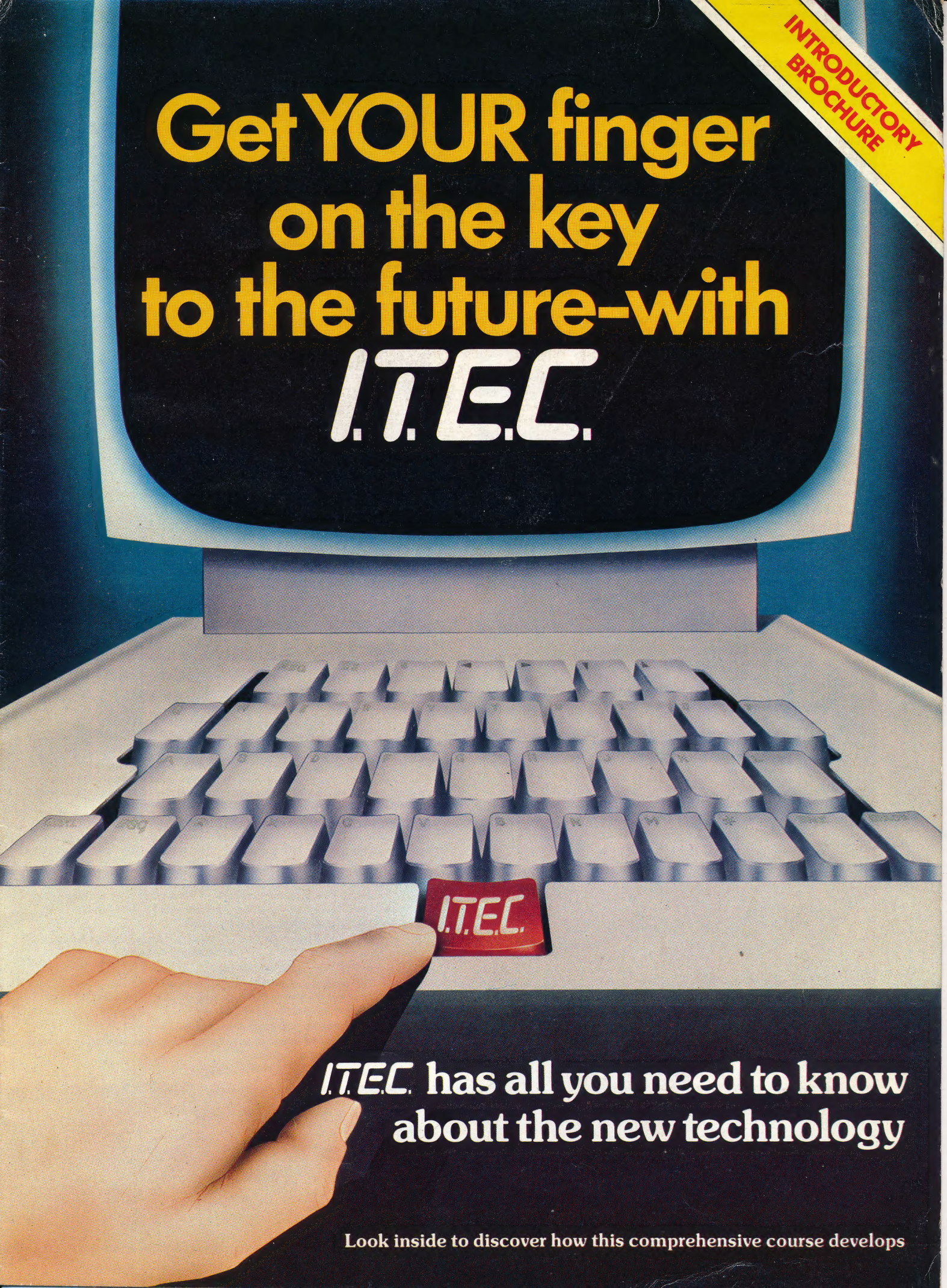
INTRODUCTORY BROCHURE

Get YOUR finger on the key to the future-with I.T.E.C.



I.T.E.C. has all you need to know about the new technology

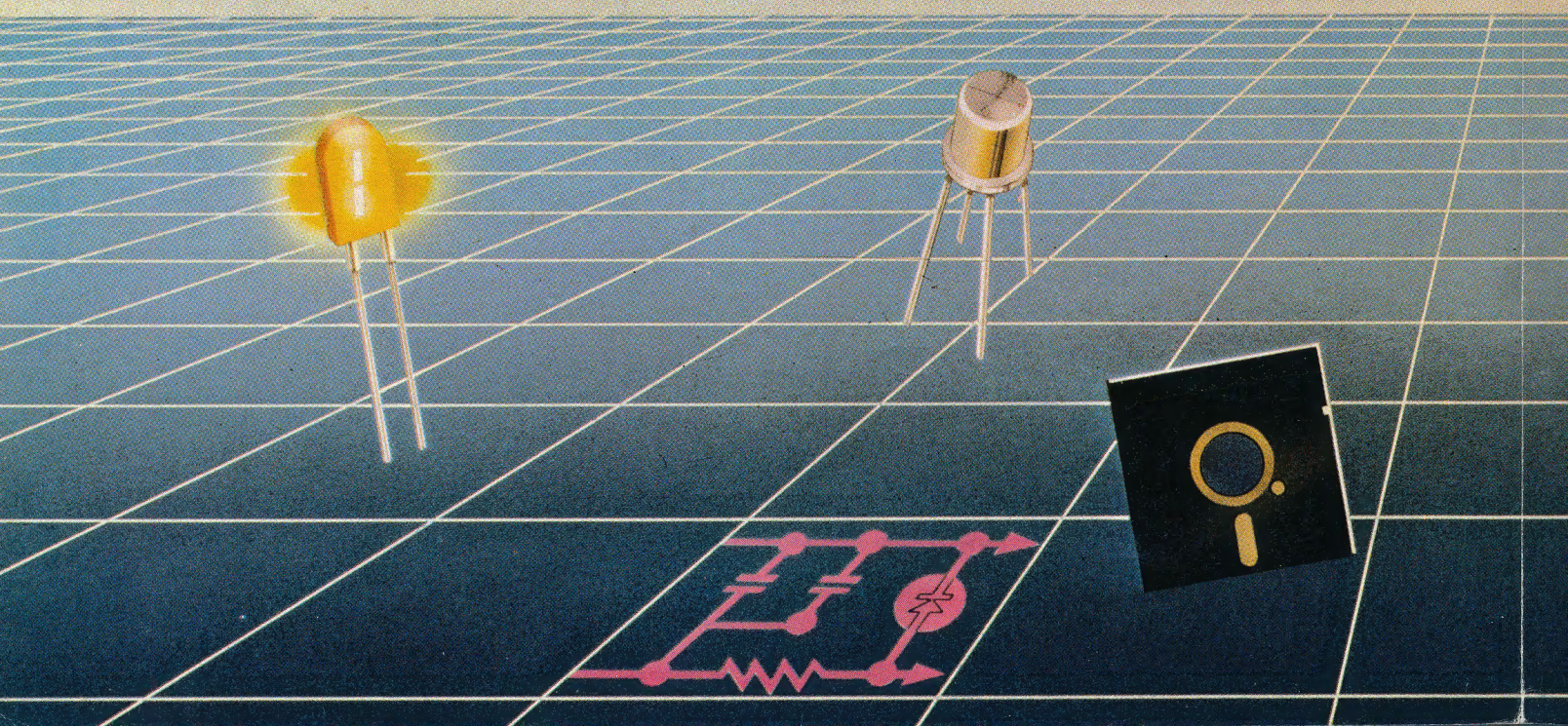
Look inside to discover how this comprehensive course develops

The micro-millenn

We are living in the age of electronics and computer science – a silent revolution which is changing our way of life. Now is the time to make your move and keep up to date with this extraordinary force of progress.

I.T.E.C. is for everyone who wants to step into the micro-millenium with real awareness, and play an active part in the exciting era that awaits us!

You owe it to yourself to understand the new technology – how it will affect you, and how it can be used to your advantage.



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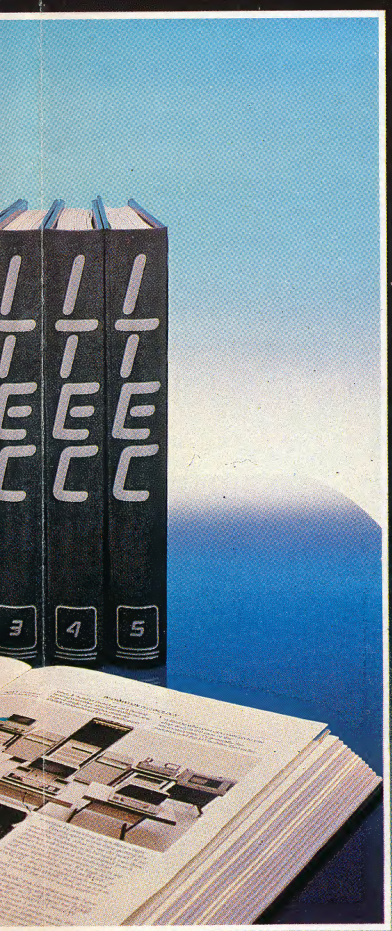


- explained by experts in a way non-specialists will understand
- clear, thorough text with helpful diagrams
- carefully planned to build into a comprehensive course
- develops your knowledge of each subject in easy stages
- covers all major aspects of computers, electronics, and information technology
- complete in just 50 parts plus index

How you can learn with the

I.T.E.C. is divided into these major sections:

DIGITAL ELECTRONICS

Understanding the hardware involved and how it works — principles that underlie all kinds of digital systems, from a cash register or petrol pump to the most sophisticated digital computer. Aspects covered include:

Basics of a system
What happens inside a calculator? How can a switching circuit store information? How can electricity transmit numbers?

How digital circuits make decisions
The basics of the logic gates AND, OR, NOT, NAND and NOR are explained.

Building blocks that make decisions.
Design a digital network from a truth table. Learn about combinational building blocks.

Building blocks with memory
Flip-flops and where they are used. What are parallel and shift registers used for? What is the difference between asynchronous and synchronous counters? What's a sequential building block?

Why digital?
Even though digital systems are doing jobs more effectively and at less cost, some jobs are best done the analogue way. Explore the advantages and disadvantages of each.

Digital integrated circuits
The amazing technology of the IC; the advantages and limitations of integration.

Mass storage in digital systems
Digital systems need circuits that remember information. Static, dynamic, random access, read-only, volatile, non-volatile are some of the concepts to understand.

How digital systems function
Putting it all together: full parallel and full serial addition, BCD addition, control and timing signals, how electronic circuits subtract.

Programmed digital systems
More complete and flexible systems with variable programming. The role of microprocessors.

Digital electronics today and in the future
Where and how digital electronics is being applied. Covers key applications and the major new developments.

SOLID STATE ELECTRONICS

The basic components and techniques which the electronic engineer has at its disposal, how they are made and how they function — and how a vast

BASIC COMPUTER SCIENCE

How a computer system is organized, and how it is programmed to carry out its job. Aspects covered include:

Computer science — past, present and future
How computers evolved over the short span of 30 years. The major developments and their impact on computer capability.

Computer architecture
What goes on in a computer? How are instructions handled electronically? Learn how all the various units inter-relate.

How to tell a computer what to do — programming
Computers can do only what people tell them to do. What is a program? An algorithm? How is software designed?

Languages
Languages the computer understands and how these are used to give instructions. Assembler, Cobol, Basic, Fortran, Pascal, PL 1 and others are covered. A look at languages of the future.

Operating systems — an overview
Understanding the software called an operating system, and how it controls the computer system to accomplish a task.

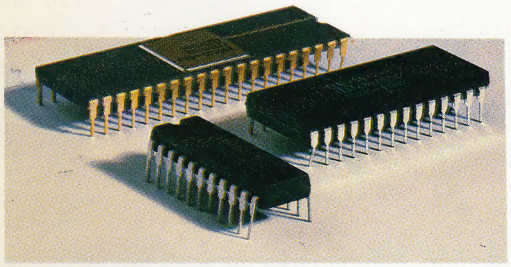
Resource management
Learn about the management of software — Jobs, Memory, Processor, I/O, Information — required by the computer system resources.

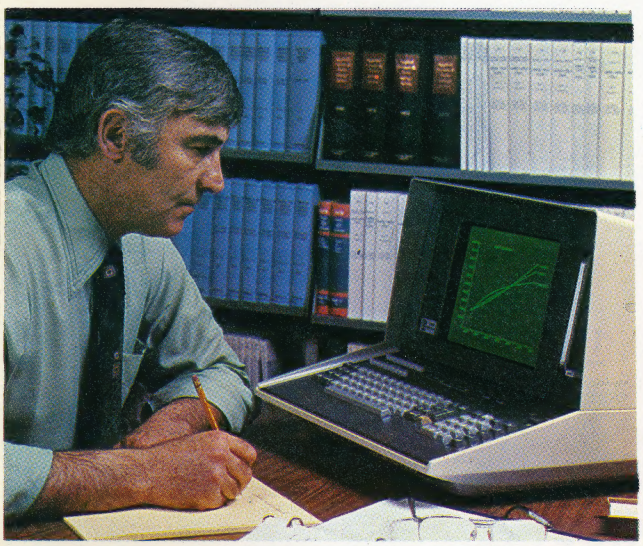
Data structures
Understand how information (data) can be structured in memory to make programs operate effectively when searching, sorting, up-dating data.

Language translators
Conversions are made from human instructions to machine instructions by language translators. Loaders, compilers, assemblers, interpreters are explained.

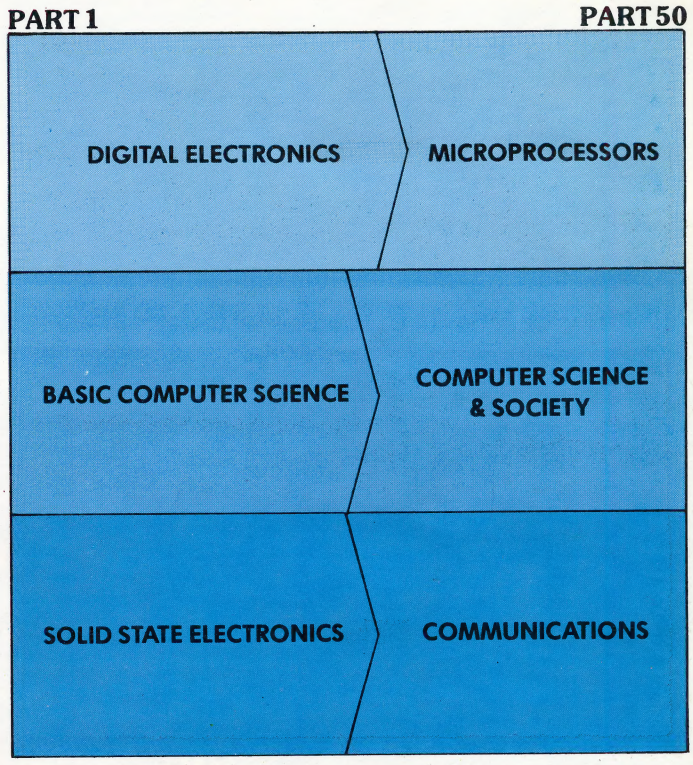
Systems analysis
Deciding what computer system resources are required. Follow an actual application from idea to solution.

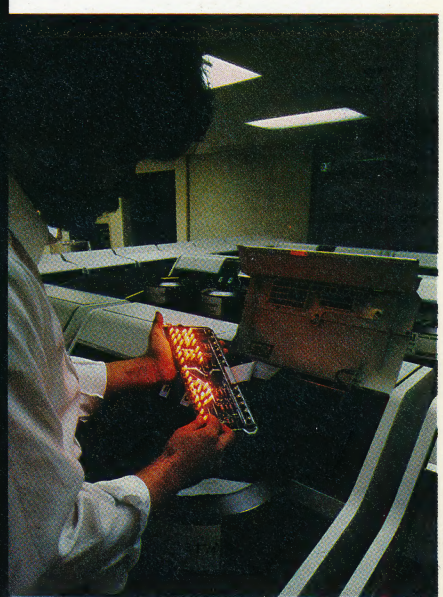
he I.T.E.C. easy-stages course





I.T.E.C. is complete in just 50 parts plus index. This is how the subjects appear throughout the weekly parts.





amount of complex technology can be concentrated on to a tiny chip. **Aspects covered include:**

Making use of electricity
Basic concepts of electronic systems and how electricity is used.

Basic circuit functions in a system
How semiconductor devices fit into circuits. How a designer uses integrated circuits as building blocks in creating a system.

How circuits make decisions
How decisions are made in digital and analogue systems. How logic gates work to add numbers.

Relating semiconductors to systems
How frequency, power and other characteristics govern the choice of semiconductors for systems. Explanation of inductance and capacitance.

Diodes: what they do and how they work
A diode, a semiconductor one-way valve, is used as the basis of operation of all semiconductors. How doping of material forms P-N junctions.

Diode performance and specifications
Specifications a designer looks for in using diodes. Conventional current vs electron current.

Transistors: how they work, how they are made
How an n-p-n transistor works and switches a large 'working' current in response to a small 'control' current. Semiconductor manufacturing techniques.

The P-N-P transistor and transistor specifications
How p-n-p transistors are used in circuits and how they work. The 7 transistor specifications most important to users

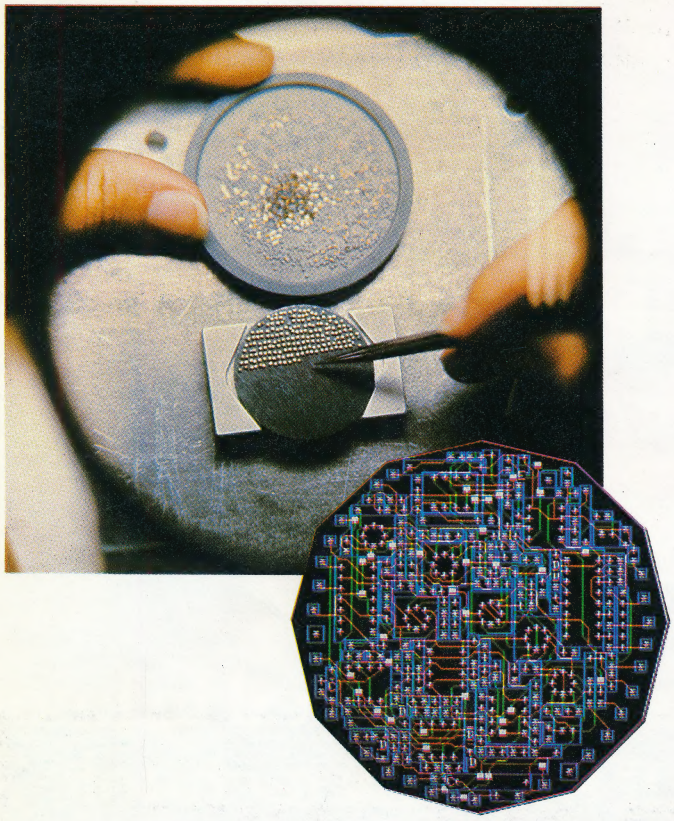
Thyristors and optoelectronics
Operating principles, key specifications and applications of other useful semiconductor devices — SCRs, Triacs, LEDs and phototransistors.

Introduction to integrated circuits
Concepts common to all integrated circuits (ICs). How transistors, resistors and diodes are created in a single silicon chip to form a circuit.

Digital integrated circuits
Uses of the main circuits available for building block assembly into digital systems such as computers. Key specifications for digital circuits and differences between family types such as TTL and DTL.

MOS and large-scale integrated circuits
How an MOS transistor works, how it compares to a bipolar transistor, and its role in creating single-chip microcomputers.

Linear integrated circuits
The techniques of building linear integrated circuits and how these are applied.



COMMUNICATIONS

Understanding electronic communications — a vital part of the new era of information transfer technology. Aspects covered include:

Using electrical signals for communications
Electronic communications information must be converted to electrical signals. Find out the basic techniques used for AM, FM, PDM, PCM systems.

Basic system functions and conversions
The basic conversions that are used in communications and what they do, such as amplifiers, oscillators, frequency/voltage, analogue to digital, digital to analogue, serial parallel data transfers, code conversions.

Basic electronic communications systems
How do AM and FM radio systems work? What are the advantages of digital communications systems? What is time multiplexing and frequency multiplexing?

The communications spectrum
Understand what spectrum means and how it is allocated. Learn how signals are transmitted through coax cables, waveguides and fibre optics.

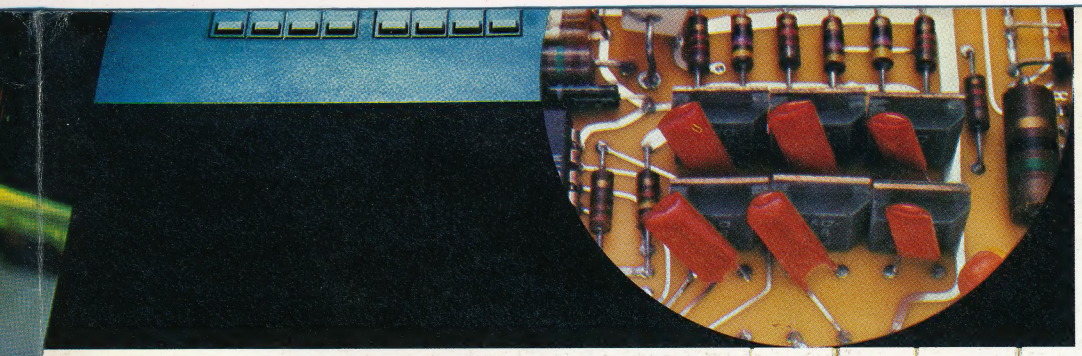
Telegraph and telephone systems
The basic concepts of telegraph and telephone systems. System techniques such as SXS, crossbar, ESS, FDM and TDM are included.

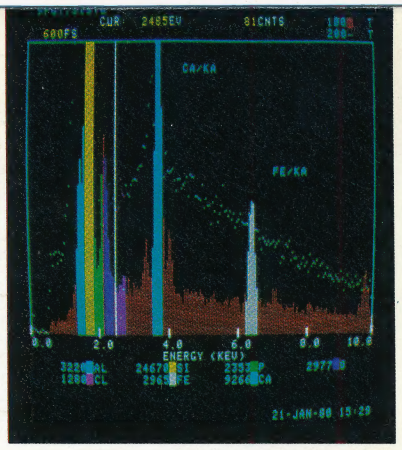
Radio and television systems
How are TV images transmitted and received? How are colour signals handled? What are the bandwidth requirements for radio and TV? How do FM stereo and Dolby systems operate?

Computer networks and systems
The communication of digital data between computers and the input and output of information to humans.

Facsimile
What you need to know about facsimile systems. How they operate, how they are used, what type of systems are available.

Satellite communications systems
The different types of satellites and how they are used for global communications.





MICROPROCESSORS

The units which lie at the heart of today's electronic systems. A detailed look at how they operate and work to solve problems. Aspects covered include:

Microprocessors and digital systems
Why microprocessors are making such an impact, and will have such importance in the future.

Basic concepts in microcomputer systems
What are the building blocks of a microcomputer system and how do they work together?

Circuits and functions
The overall concepts of how digital functions are provided by digital integrated circuits.

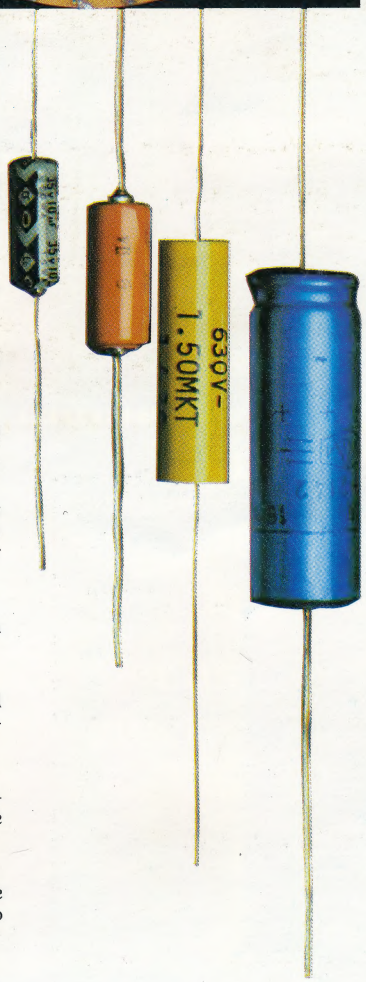
Microcomputer system operation
Learn what an instruction set is and the kinds of instructions that are normally provided when using microprocessors. How do you select the microprocessor to use? How are the components of a microcomputer connected to make them work together?

A system application with SAM
How to apply microprocessors to a specific problem by using the features of a fictitious Simplified Architecture Microprocessor.

Programming concepts
The steps necessary to transform an idea into software are defined and applied. Instruction set differences, assembly language programming, high-level language, program verification, I/O subprograms are covered.

An 8-bit microprocessor application
Bringing things together by designing a specific system using an 8-bit microprocessor. How do the 8-bit features and instruction set capabilities dictate the design?

A 16-bit microprocessor application
Find out when and why to use a 16-bit microprocessor. Examine the instruction set, explore the operation and features, and apply a unit to develop a system.



COMPUTERS AND SOCIETY

An in-depth examination of the ways in which computers and electronics are changing many different aspects of life and work — as well as the moral and legal problems that electronic automation can pose. Aspects covered include:

Computers and scientific progress
Computers and technology
Computers in the home
Office and business applications
Computers and electronics in industry
Computer music
Computer graphics
Computer-aided design and control
Secrecy and privacy of information
Artificial intelligence
Computers and the future of education

NEWSAGENT ORDER FORM

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What is the level of the *ITEC* course?

Part 1 of *ITEC* starts off with the basics but rapidly becomes more complex. The next few parts take you through such areas as: operation of logic gates, binary codes and truth tables • how transistors work as switches and as amplifiers • the structure of semiconductor materials and devices • address, control and data busses • how computer memories are organized and accessed...

Presented in a weekly format, *ITEC* is like having evening classes in your own home. Each part gives you further chapters from the major subject sections, with everything fully explained. It's planned to help your knowledge grow progressively so that, as new ideas are introduced, you understand the principles on which they are based.

Who is *ITEC* for?

From the young student battling with solid state electronics or computer science, to the enquiring adult who did his learning in the pre-transistor days, *ITEC* fulfils a need for all.

Whether you are a trainee wanting to get ahead, someone who is interested in electronics and computers as a hobby, or you just want to understand the technology that's changing your everyday life — *ITEC* has the facts.

These are the kinds of questions that *ITEC* will answer:

A **microprocessor** carries out thousands of operations every second. How does it know what to do — and when? Understand the precise operation of the **program counter, instruction decoder, ALU** and other system components.

Top-down design is today's method for writing programs. Why has this become the preferred system, and what does it involve?

Boolean algebra is fundamental to the working of every computer. Learn how it is used in the design of **logic circuits.**

Fibre optics will revolutionise the telephone exchange of the future, but exactly how does the technology work?

Everyone knows about **Basic** but why do experts use **Fortran, Pascal** or other languages?

TTL, CMOS and **I²L** are some of the important building blocks of digital systems. What do the terms mean and how do these circuits operate?